

Classification of Poisons

1. Based on their toxic effects in the body as:

A. Poisons which cause death by anoxia-

1. Poisons which make haemoglobin incapable of transporting oxygen

e.g. Carbon monoxide, nitrites

2. Poisons which inhibit cellular respiratory enzymes

e.g. Cyanides

3. Poisons which destroy haemopoietic organs

e.g. Radioactive substances

B. Poisons, which on contact cause irritation or corrosiveness of the organs (skin) or damage the organ through which they are excreted (GI tract, respiratory tract, urinary tract)

e.g. Irritant gases, alkaline corrosives, corrosive inorganic acids, corrosive organic acids and heavy metals

C. Poisons, which damage protoplasm or parenchyma.

- These poisons produce local irritation and after absorption cause damage to the cells and capillaries
- e.g. Phosphorus and carbon tetrachloride

D. Poisons, which affect the nerve cells and fibres

e.g. Hypnotics, narcotics, anesthetics, alcohol, some alkaloids and glycosides

2. Based on their chemical and physical nature as,

- ✓ organic poisons,
- ✓ inorganic poisons,
- ✓ gaseous poisons,
- ✓ nitrogenous and
- ✓ non-nitrogenous organic poisons *etc.*

3. Based on their behaviour during separation procedures as-

- ✓ volatile poisons,
- ✓ non-volatile organic poisons isolated by solvent extraction,
- ✓ metallic poisons and
- ✓ miscellaneous poisons.

4. Based on their origin as-

- ✓ plant poisons,
- ✓ toxins,
- ✓ venoms *etc.*

5. Based on their use as-

- ✓ antimicrobials,
- ✓ anticoccidials,
- ✓ anthelmintics,
- ✓ anaesthetics *etc.*

6. Based on the source as -

- ✓ naturally occurring and
- ✓ man-made.

Types of poisoning

1. Acute poisoning

- Acute poisoning is associated with exposure to a relatively large, often single, dose of a toxic agent, this being followed by rapid manifestation of more severe clinical signs of intoxication.
- It is also defined as sudden violent syndrome caused by a single large dose of poison.

2. Sub-acute poisoning

- In sub-acute poisoning the exposure level is lower and the survival time longer, than in acute poisoning, but the period between exposure and manifestation of signs of poisoning and possible death is again relatively short.
- Symptoms of toxicity develop gradually.

- In sub-acute toxicity studies, low doses of poisons are administered for a period of 90 days.
- These tests are performed to study, the No Observed Effect Level or No Observed Adverse Effect Level and to identify the specific organ(s) affected by the test compound after repeated administration.

3. Chronic

- Chronic poisoning is usually caused by multiple exposures to the poison, while individual quantities are not sufficiently large to produce clinical intoxication.
- It is also defined as persistent lingering condition brought about by small repeated doses.
- A relatively long delay is observed between the first exposure to the toxic agent and the eventual development of signs of poisoning.
- Agents that cause chronic poisoning exhibit a cumulative effect.
- They either accumulate within the body or produce additive tissue damage.
- Once this level becomes critical, symptoms of poisoning develop.

- In some cases, the development of symptoms of poisoning may be noticed many months after the exposure, even if there is no contact with the poison during the intervening period.
- In the chronic toxicity studies, the exposure time is six months to two years for rodents and one year for non-rodents.